

REMARKS

Status of Application

Claims 1-20 were pending in the application. By this amendment, claim 9 is canceled. Thus, the status of the claims is as follows:

Claims 2-6, 8, and 10-20 are objected to because of informalities.

Claims 3, 4, and 10 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claims 1-8, 10-18, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,184,940 B1 to Sano ("Sano") in view of U.S. Patent No. 6,995,791 B2 to Skow ("Skow").

Claim 19 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Skow as applied to claim 18 above, and further in view of U.S. Patent No. 6,972,800 B2 to Sano et al., ("Sano et al.").

Objection to the Title

The objection to the title of the invention as not being descriptive is noted and a new title is presented in this Amendment which is clearly indicative of the invention to which the claims are directed. Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Claim Amendments

Claims 2-6, 8, 10-17, and 19-20 have been amended to change the preamble from "An image-sensing apparatus . . ." to "The image-sensing apparatus" These changes are not

necessitated by the prior art, are unrelated to the patentability of the invention over the prior art, and do not introduce any new matter.

Claims 1, 3, 4, 7, 10, and 18 have been amended to more clearly define their terms. These changes do not introduce any new matter.

35 U.S.C. § 112 Rejection

The rejection of claims 3, 4, and 10 under the second paragraph of 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention, is respectfully traversed based on the following.

Claims 3, 4, and 10 have been amended to more clearly define their terms, thereby overcoming the indicated antecedent basis errors.

Accordingly, it is respectfully requested that the rejection of claims 3, 4, and 10 under the second paragraph of 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention, be reconsidered and withdrawn.

35 U.S.C. § 103(a) Rejections

The rejection of claims 1-8, 10-18, and 20 under 35 U.S.C. § 103(a), as being unpatentable over Sano in view of Skow, is respectfully traversed based on the following.

Regarding claims 1, 7, and 18, the Office Action cites various portions of Sano for disclosure regarding an image-sensing apparatus comprising a solid-state image sensor having various properties. However, a careful inspection of the indicated portions of Sano shows that Sano fails to disclose or suggest “a plurality of pixels that perform photoelectric conversion so as to generate output signals that vary with a first characteristic in a first region such that the output signals vary linearly with respect to an amount of incident light and with

a second characteristic in a second region such that the output signals vary logarithmically with respect to the amount of incident light” as required by claims 1, 7, and 18.

Specifically, on page 4, the December 14, 2007 Office Action cites to Sano for disclosing “a plurality of pixels that perform photoelectric conversion (col. 3, lines 35-36; col. 5, lines 13-16) so as to generate output signals that vary with a first characteristic (long color signal) in a first region and with a second characteristic (short color signal) in a second region (high-brightness area) with respect to amount of incident light (col. 2, lines 14-55; col. 3, lines 17-51).” Sano, however, fails to disclose or suggest output signals that vary linearly with respect to an amount of incident light in combination with output signals that vary logarithmically with respect to the amount of incident light as claims 1, 7, and 18 require. Rather, Sano teaches “an image apparatus which separately adjusts the white balances of image signals obtained through longer time exposure and short time exposure.” *See* Sano, col. 2, lines 13-17 (emphasis added). In Sano, the “imaging device is configured to alternately output a first image signal having been obtained through long time . . . exposures and a second image signal having been obtained through short time . . . exposures” through the use of a purely linear conversion characteristic. *See* Sano, col. 3, lines 17-21 and Fig. 2 (emphasis added). Sano does not, however, disclose employing both linear and logarithmic conversion characteristics in different regions during the use of an image sensor.

Similarly, Skow fails to disclose or suggest “a plurality of pixels that perform photoelectric conversion so as to generate output signals that vary with a first characteristic in a first region such that the output signals vary linearly with respect to an amount of incident light and with a second characteristic in a second region such that the output signals vary logarithmically with respect to the amount of incident light” as required by claims 1, 7, and 18. Rather, Skow teaches an embodiment that includes comparing a color histogram mean or median to a center point of the histogram color dynamic range and calculating the difference between the two values to derive a white balance correction value. *See* Skow, col. 11, lines 40-61. Although Skow discloses using a histogram to derive a white balance

correction value, it is clear that Skow does not disclose employing both linear and logarithmic conversion characteristics in different regions during the use of an image sensor.

Contrary to Sano and Skow, Applicants teach a solid-state image sensor that is switchable between linear and logarithmic conversion relative to the brightness of the subject being shot. *See* current specification, paragraph [0003]. Accordingly, when the brightness of the subject being shot is low and thus the amount of incident light is small, a voltage (of the signal fed from the pixels of the solid-state image sensor) that is linearly proportional to the integral of the amount of incident light appears and when the brightness of the subject being shot is high and thus the amount of incident light is large, a voltage that is natural-logarithmically proportional to the amount of incident light appears. *See* current specification, paragraph [0033]. Thus, by detecting the brightness range of the subject and then, if the brightness range of the subject is narrow, lowering the voltage level of the signal to widen the brightness range in which it is converted linearly, or if the brightness range of the subject is wide, raising the voltage level of the signal to widen the brightness range in which it is converted logarithmically, it is possible to obtain photoelectric conversion characteristics that suit the characteristics of the subject. *See* current specification, paragraph [0035]. By letting the voltage level of the signal be switched, it is possible to set the switching point (a brightness value) at which the pixels of the solid-state image sensor switch between linear and logarithmic conversion. *See* current specification, paragraph [0036].

Therefore, since neither Sano nor Skow discloses employing both a linear and a logarithmic conversion characteristic in different regions during the use of an image sensor, combining Sano and Skow will not disclose or suggest such a linear and logarithmic characteristic.

Claims 2-6 depend from claim 1. As claim 1 is considered nonobvious over the combination of Sano and Skow, claims 2-6 are likewise considered nonobvious for at least the same reasons.

Claims 8 and 10-17 depend from claim 7. As claim 7 is considered nonobvious over the combination of Sano and Skow, claims 8 and 10-17 are likewise considered nonobvious for at least the same reasons.

Claim 20 depends from claim 18. As claim 18 is considered nonobvious over the combination of Sano and Skow, claim 20 is likewise considered nonobvious for at least the same reasons.

Accordingly, it is respectfully requested that the rejection of claims 1-8, 10-18, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Skow, be reconsidered and withdrawn.

The rejection of claim 19 under 35 U.S.C. § 103(a), as being unpatentable over Sano in view of Skow as applied to claim 18 above, and further in view of Sano et al., is respectfully traversed based on the following.

Claim 19 depends from claim 18. As claim 18 is considered nonobvious over the combination of Sano and Skow for at least all of the reasons discussed supra, claim 19 is likewise considered nonobvious for at least the same reasons.

Further, Sano et al., fails to disclose or suggest “a plurality of pixels that perform photoelectric conversion so as to generate output signals that vary with a first characteristic in a first region such that the output signals vary linearly with respect to an amount of incident light and with a second characteristic in a second region such that the output signals vary logarithmically with respect to the amount of incident light” as required by claim 18. In fact, Sano et al., does not disclose or suggest a method that employs both linear and logarithmic conversion. Therefore, Sano et al., cannot disclose or suggest employing both linear and logarithmic conversion characteristics in different regions during the use of an image sensor.

Thus, since neither Sano, Skow, nor Sano et al., discloses or suggests employing both linear and logarithmic conversion characteristics in different regions during the use of an

image sensor, combining Sano, Skow and Sano et al., will not disclose or suggest each limitation of claim 18, from which claim 19 depends. Thus, both claims 18 and 19 are considered nonobvious over the combination of Sano, Skow, and Sano et al.

Accordingly, it is respectfully requested that the rejection of claim 19 under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Skow as applied to claim 18 above, and further in view of Sano et al., be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin LLP Deposit Account No. 18-1260.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee,

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and not submitted herewith should be charged to Sidley Austin LLP Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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